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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,126	03/16/2004	Zuyun Fang	OPT-115	3441
23574	7590	01/07/2005	EXAMINER	
ANDREI D POPOVICI 786 LA MESA DRIVE PORTOLA VALLEY, CA 94028			KIANNI, KAVEH C	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 01/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/802,126

Applicant(s)

FANG ET AL.

Examiner

K. Cyrus Kianni

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5,9,12,13,15,18 and 19 is/are rejected.
- 7) ☒ Claim(s) 2-4,6-8,10,11,14,16,17 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### Claim Objections

1. Claim 19 is objected to because of the following: in the second position the output light from the input fiber of the first collimator as well as the light emitted from an input fiber of the second collimator are both directed into output fiber of the first collimator is not found in the figures nor in the specification. Appropriate correction is required.

### ***Allowable Subject Matter***

2. Claims 2-4, 6-8, 10-11, 14, 16-17 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 2, 6, 10 and 16 are allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein: the first collimator and the second collimator opposite directions, and the switching prism is parallelepiped-shaped. are substantially parallel and face in combination with the rest of the limitations of the base claim.

Claims 3, 7, 11 and 17 are allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein the *switching prism is a dovetail prism* in combination with the rest of the limitations of the base claim.

Claims 4, 8, 14 and 20 are allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious the switching prism is sized and

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positioned according to a relation  $S + (L/2 + W/2)/n = Dc$  in combination with the rest of the limitations of the base claim.

### **Claim Rejections - 35 USC § 103**

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 1, 5, 9, 12-13, 15 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 6647173).

Regarding claims 1, 9 and 12-13, Chen teaches A 2x2 optical switch (shown in at least fig. 3-4) comprising:

a first dual-fiber collimator 15 comprising: a first pair of optical fibers 11,12, the first pair of optical fibers including a first input fiber 11 and a first output fiber 12; a second dual-

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fiber collimator 16 comprising a second pair of optical fibers 13,14, the second pair of optical fibers including a second input fiber 13 and a second output fiber 14; a switching prism 22/22' movable between a first position and a second position (shown in fig. 3 and 5; see col. 4, 41-43; see also col. 1, lines 37-42), wherein: in the first position (99, fig. 3), the switching prism 22 is positioned to direct light from the first input fiber 11 to the second output fiber 14, and direct light from the second input fiber 13 to the first output fiber 12; and in the second position (see fig. 6), the switching prism 22 is positioned out of an optical path of light emitted from the first input fiber 11 and the second input fiber 13; a first planar mirror 21 facing the first collimator 15, and aligned to reflect light from the first input fiber 11 into the first output fiber 12 when the switching prism is in the second position (shown in fig. 4, item prism 22 in second position); and the planar mirror 21 facing the second collimator 16, and aligned to reflect light from the second input fiber 13 into the second output fiber 14 when the switching prism 22 is in the second position (see col. 4, parag. 3-4).

However, Chen does not specifically wherein the above movable prism and associated mirror(s) in one embodiment and that the above underlined mirror is a second mirror. Although it can be argued that it is more economical to use one mirror rather than two mirrors to implement the above optical switching between the two dual-fiber collimators 15 and 16, nevertheless, it would have been obvious to a person of ordinary skill in the art when the invention was made to combine different embodiments of Chen's teachings as suggested by Chen (see col. 5, 3<sup>rd</sup> parag.) since such embodiments are essentially compatible with each other and thus by replacing the

planar mirror 21 (shown in fig. 4) with that of two mirrors in order to implement an optical switching function that involves two reflection mirrors, since such switching function would facilitate easy alignment of associated fibers and which has a low insertion loss (see col. 2, lines 42-44).

Regarding claims 5, 15 and 18-19, Chen teaches an optical switching method (see abstract and at least fig. 1) comprising:

positioning a switching prism 22 in a first position in an optical path between a first dual-fiber collimator 15 comprising a first pair of optical fibers 11,12, and a second dual-fiber collimator 16 comprising a second pair of optical fibers 13,14 comprising an output optical fiber 14,

employing the switching prism in the first position to direct light from an input fiber 11 of the first collimator 15 into an output fiber 14 of the second collimator 16, and to direct light from an input fiber 13 of the second collimator 16 into an output fiber 12 of the first collimator 15;

positioning the switching prism 22 in a second position out of an optical path of light emitted from the input fiber 11 of the first collimator 15 and the input fiber 13 of the second collimator 16 (shown in fig. 4, item 22; also see col. 4, lines 17-67+);

reflecting light emitted from the input fiber 11 of the first collimator 15 into the output fiber 12 of the first collimator 15 when the switching prism is in the second position; and reflecting light emitted from the input optical fiber 13 of the second collimator 16 into the output fiber of the second collimator 16 when the switching prism 22 is in the second

position (see col. 4, lines 17-67+). With respect to Chen's teaching of the all above steps in one embodiment, the arguments presented in rejection of claim 1, above, is analogous in rejection of claim 5.

#### ***Citation of Relevant Prior Art***

5. Prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In accordance with MPEP 707.05 the following references are pertinent in rejection of this application since they provide substantially the same information disclosure as this patent does. These references are:

Chen et al. 2003/0081885 teaches at least independent claims

Pan et al. 5999669

Pan et al. 5867617

Zhou 2003/0095742

Kunikane et al. 5048912

Laughlin 5875271

These references are cited herein to show the relevance of the apparatus/methods taught within these references as prior art.

#### ***Contact Information***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Cyrus Kianni whose telephone number is (571) 272-2417.

The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (571) 272-2415.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 872-9306 (for formal communications intended for entry)

**or:**

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South  
Clark Place, Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be  
directed to the Group Receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'K. Cyrus Kianni', followed by a long horizontal line.

K. Cyrus Kianni  
Patent Examiner  
Group Art Unit 2883

January 3, 2005